# ENERGY FIJI LIMITED

# TECHNICAL SPECIFICATION FOR SUPPLY OF STRIKER FUSE AND SUPPLY OF HIGH RUPTURING CAPACITY (HRC) BY PREFERRED SUPPLIER

## MR 116/2024

# REVISION HISTORY & DOCUMENT CONTROL

| Rev No. | Notes | Prepared By | Reviewed & Approved By | Date of Issue |
|---|---|---|---|---|
| 1 | Draft – Issued for Review | Vinaal Prakash | | 06/11/17 |
| 2 | Reviewed | | Rajiv Singh | 17/11/17 |
| 3 | Reviewed | | Rajiv Singh | 27/06/18 |
| 4 | Reviewed | | Mohammed Zainal Alim | 19/03/24 |
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## Next Scheduled Revision

This technical specification is due for review in March 2027.

# Table of Content

# INTRODUCTION

Energy Fiji Limited [EFL] is responsible for generation, transmission and distribution of electricity in Viti Levu, Vanua Levu, Ovalau and Taveuni in Fiji. By January 2023, the EFL had 215,515 customers. This included residential, commercial and institutional customers.

EFL is requesting proposal for the Preferred Supplier to supply items listed below for EFL's consumption to carryout repair, Construction and maintenance of Power line Network in Fiji.

The preferred Supplier arrangement will be for a period of three (3) years from the date of signing of the contract. The award of this Tender may be split and awarded to more than one successful bidder.

This specification sets out the technical requirements for 12kV Striker Fuses and HRC Fuses suitable for use in distribution switchgear and distribution network. The fuses are primarily used for the protection of distribution transformers.

The items covered by this Specification are listed below:

| Stock No. | Item Description |
|---|---|
| I02137 | 20A 11KV STRIKER PIN FUSE |
| I04608 | 25A 11KV STRIKER PIN FUSE |
| I02138 | 31.5A 11KV STRIKER PIN FUSE |
| I04609 | 40A 11KV STRIKER PIN FUSE |
| I04610 | 50A 11KV STRIKER PIN FUSE |
| I02139 | 63A 11KV STRIKER PIN FUSE |
| I04611 | 80A 11KV STRIKER PIN FUSE |
| I02140 | 125A 11KV STRIKER PIN FUSE |

| Stock Code | Item Description |
|---|---|
| I01964 | 20A HRC FUSE |
| New Item | 25A HRC FUSE |
| I01965 | 32A HRC FUSE |
| I02002A | 40A HRC FUSE |
| New Item | 50A HRC FUSE |
| I01968 | 63A HRC FUSE |
| I02005 | 80A HRC FUSE |
| I02006 | 100A HRC FUSE |
| I02022 | 125A HRC FUSE |
| I02023 | 160A HRC FUSE |
| I02024 | 200A HRC FUSE |
| I02047 | 250A HRC FUSE |
| I02048 | 300A HRC FUSE |
| New Item | 355A HRC FUSE |
| I02021 | 400A HRC FUSE |

***Table 1.1: Items Covered Under this Specification***

This Specification covers the general requirements of design, manufacture, testing, supply and delivery of 12kV striker fuses suitable for use in distribution insulated switchgears.

# 1. INSTRUCTIONS TO BIDDERS

## 1.1 Eligible Bidders

This invitation is open to all Bidders who have sound Financial Background, and have previous experience in design, manufacture, testing and supply of such pole-mounted and platform-mounted transformers.

Bidders shall provide such evidence of their continued eligibility satisfactory to EFL as EFL shall reasonably request. Bidders who are not manufacturers of such transformers shall provide evidence of agency.

Bidders shall not be under a declaration of ineligibility for corrupt or fraudulent practice.

## 1.2 Eligible Materials, Equipment and Services

The materials, equipment, and services to be supplied under the Contract shall have their origin from reputable companies (as specified by EFL where relevant) and from various countries and all expenditures made under the Contract will be limited to such materials, equipment, and services. Upon request, bidders may be required to provide evidence of the origin of materials, equipment, and services.

For purposes of this Contract, "services" means the works and all related services including design services.

For purposes of this Contract, “origin" means the place where the materials and equipment are mined, grown, produced or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing or substantial or major assembling of components, a commercial recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

The materials, equipment and services to be supplied under the Contract shall not infringe or violate any industrial property or intellectual property rights or claim of any third party.

## 1.3 One Bid per Bidder

Each bidder shall submit only one bid. A bidder who submits or participates in more than one bid will cause all those bids to be rejected.

## 1.4 Cost of Bidding

The bidder shall bear all costs associated with the preparation and submission of its bid and EFL will in no case be responsible or liable for those costs.

## 1.5 Site Visits

Bidders can visit existing EFL networks by making arrangements to visit existing EFL installations. Bidders are required to familiarize themselves with the existing EFL installations so the solutions they offer does not require modification to existing poles and support infrastructure.

## 1.6 Contents of Bidding Documents

The bidder is expected to examine carefully the contents of this Bidding document. Failure to comply with the requirements of bid submission will be at the bidder's own risk. Bids which are not substantially responsive to the requirements of the bidding documents will be rejected.

## 1.7 Clarification of Bidding Documents

A prospective bidder requiring any clarification of the bidding documents may notify EFL in writing by email, addressed to:

Jitendra Reddy
Manager Procurement, Inventory & Supply Chain
2 Marlow Street,
Suva, Fiji
Phone: +679 331 3333 Ext 2320 or
Mobile: +679 999 2400
Email: JReddy@efl.com.fj

EFL will respond to any request for clarification which it receives earlier than 10 days prior to the deadline for submission of bids.

## 1.8 Amendment of Bidding Document

At any time prior to the deadline for submission of bids, EFL may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by issuing addenda.

## 1.9 Language of Bid

The bid, and all correspondence and documents related to the bid, exchanged between the bidder and the EFL shall be written in the English language.

## 1.10 Bid Prices

Unless specified otherwise, Bidders shall quote for the entire facilities on a “single responsibility" basis such that the total bid price covers all the Supplier’s obligations mentioned in or to be reasonably inferred from the bidding documents in respect of the design, manufacture, including procurement and subcontracting (if any), testing and delivery.

Bidders shall give a breakdown of the prices in the manner and detail called for in this bidding document, or any issued addenda.

Bids shall be given on CIF basis. The point of delivery shall be EFL’s Navutu Depot in Lautoka. The term CIF shall be governed by the rules prescribed in the current edition of Incoterms, published by the International Chamber of Commerce, Paris.

EFL has a marine insurance cover for items it is required for purchase for its project and operational works. Bidders are required to comment if the marine insurance component is covered in their bids.

## 1.11 Bid Currencies

Prices shall be quoted in a single currency only.

## 1.12 Bid Validity

Bids shall remain valid for a period of **120 days** from the date of Deadline for Submission of Bids specified in Sub-Clause 21.1.

## 1.13 Format and Signing of Bids

The bidder shall provide one electronic copy of the Technical and Financial proposals on EFL's electronic tender hosting website; https://www.tenderlink.com/efl

The bid shall contain no alterations, omissions or additions, except those to comply with instructions issued by EFL, or as necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

## 1.14 Sealing and Marking of Bids

Due to the Covid19 restrictions on movements, bidders are encouraged to bid via Tender link Portal.

## 1.15 Deadline for Submission of Bids

Bids must be received by EFL at the address specified above no later than **1600 hours (Fiji Time) 1st May 2024**.

EFL may, at its discretion, extend the deadline for submission of bids by issuing an addendum, in which case all rights and obligations of EFL and the bidders previously subject to the original deadline will thereafter be subject to the deadlines extended.

## 1.16 Late Bids

Any bid received by EFL after the deadline for submission of bids prescribed above will be rejected.

## 1.17 Modification and Withdrawal of Bids

The bidder may modify or withdraw its bid after bid submission, provided that written notice of the modification or withdrawal is received by EFL prior to the deadline for submission of bids.

No bid may be modified by the bidder after the deadline for submission of bids.

## 1.18 Rejection of One or All Bids

EFL reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for the rejection.

## 1.19 Process to be Confidential

2.19.1. Information relating to the examination, clarification, evaluation and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process.

2.19.2. Any effort by a bidder to influence EFL's processing of bids or award decisions may result in the rejection of the bidder's bid.

2.19.3. Lowest bid will not necessarily be accepted as successful bid.

## 1.20 Clarification of Bids

To assist in the examination, evaluation and comparison of bids, EFL may, at its discretion, ask any bidder for clarification of its bid. The request for clarification and the response shall be in writing, but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by EFL in the evaluation of the bids.

## 1.21 Compliance with Specifications

The tender shall be based on the equipment and work specified and shall be in accordance with the Technical Specification. It should be noted that unless departures from specifications are detailed in Schedules of the Technical Specification, the tender would be taken as conforming to the Specification in its entirety. The Bidder shall tender for the whole of the Works included in the Specification.

# 2. APPLICABLE STANDARDS

The item shall be designed, manufactured and tested in accordance with the latest edition of the Standards specified below and all amendments issued prior to the date of closing of tenders except where varied by this specification.

**Striker Fuse**

| | |
|---|---|
| AS 1033.2 | High voltage fuses (for rated voltages exceeding 1000V) Part 2 – Current-limiting (Powder-filled) type |
| IEC 60282-1 | High-voltage fuses- Part 1: Current-limiting fuses |
| AS 1856 | Electroplated coatings - silver |
| AS 2650 | High voltage a.c switchgear and control gear – common requirements |
| AS 4169 | Electroplated coatings – tin and tin alloys |

**HRC Fuses**

| | |
|---|---|
| AS 1856 | Electroplated coatings- silver |
| AS 2700 | Color standards for general purpose. |
| AS 4169 | Electroplated coatings- tin and tin alloys |
| AS/NZS 60269 | Low Voltage Fuses |
| AS/NZS ISO:9001 | Quality Management Systems – model for quality assurance in design, development, production, installation and servicing |

Should inconsistencies be identified between standards and/or this specification, the tenderer shall immediately refer such inconsistencies to the EFL for resolution.

# 3. SERVICE CONDITIONS

## 3.1 Environmental Conditions

The switchgear using the fuses to be purchased under this specification will be exposed to the following environmental conditions:

| **Description** | | **Conditions** |
|---|---|---|
| Atmosphere Pollution Level | : | Saliferous, Corrosive and Dusty |
| Ambient Temperature | : | Peak: 40$^{o}$C<br>24 Hour Average: 30$^{o}$C<br>Annual Average: 22$^{o}$C<br>Minimum: 10$^{o}$C |
| Relative Humidity (Average) | : | 90% |
| Rainfall | : | Annual Average: 2663mm |
| Isokeraunic (Thunder day) level | : | 60 thunder days per year |
| Seismic | : | To a maximum of 7 on the open-ended Richter Scale |

**Note:** Fiji is situated in a region where cyclones are experienced frequently. All plant and equipment shall be designed and constructed to withstand these extreme conditions. All plant and equipment shall be rust proof, vermin proof and weather proof and designed to be suitable for a damp, tropical climate, which may be experienced simultaneously.

## 3.2 System Conditions

| | |
|---|---|
| Nominal Voltage | 11kV |
| System Highest Voltage | 12kV |
| System Frequency | 50Hz |
| Number of Phases | 3 |
| System Earthing | Effectively Earthed |
| Impulse Withstand Voltage (peak) | 95kV |
| Power Frequency Withstand Voltage | 28kV (rms) |

**HRC Fuses**

## 3.3 Environmental Conditions

The HRC Fuses shall be suitable for installation outdoors and shall be designed to withstand the following service conditions.

| **Description** | | **Conditions** |
|---|---|---|
| Atmosphere Pollution Level | : | Saliferous, Corrosive and Dusty |
| Ambient Temperature | : | Peak: 40$^{o}$C<br>24 Hour Average: 30$^{o}$C<br>Annual Average: 22$^{o}$C<br>Minimum: 10$^{o}$C |
| Relative Humidity (Average) | : | 90% |
| Rainfall | : | Annual Average: 2663mm |
| Isokeraunic (Thunder day) level | : | 60 thunder days per year |
| Seismic | : | To a maximum of 7 on the open-ended Richter Scale |

**Note:** Fiji is situated in a region where cyclones are experienced frequently. All plant and equipment shall be designed and constructed to withstand these extreme conditions. All plant and equipment shall be rust proof, vermin proof and weather proof and designed to be suitable for a damp, tropical climate, which may be experienced simultaneously.

## 3.4 System Conditions

| | |
|---|---|
| Nominal Voltage | 240V/ 415V |
| System Highest Voltage | 660V |
| System Frequency | 50Hz |
| Number of Phases | 1 or 3 |
| System Earthing | Effectively Earthed |
| Impulse Withstand Voltage (peak) | - |
| Power Frequency Withstand Voltage | 15kV |

# 4. DESIGN AND CONSTRUCTION - Striker Fuse

Equipment offered by the bidders will need to conform to this Specification.

## 4.1 Requirements

The fuse-links shall have the following ratings and comply with the Australian Standard AS1033.2 or an equivalent international standard. The fuse-links shall be used primarily for protection of delta connected three phase distribution transformer.

## 4.2 Ratings

| | |
|---|---|
| Rated Voltage | 12KV |
| Rated Current | Refer table below |
| Rated Breaking Current | 40KA (minimum) |
| Rated Frequency | 50Hz |
| Fuse Classification | Full Range |
| Rated Insulation level of Fuse-holder | 95kV BIL |

Full range fuses are specified above but fuses of other classification will be considered.

## 4.3 Fuse Link Application

The HV fuse sizes currently used by EFL for the protection of distribution transformers (with delta connected primary) are listed below.

| **Transformer Three Phase KVA** | **Fuse Rating (A) for 12kV Transformer** | **Typical Fuse Rating for LV** |
|---|---|---|
| 100 | 16 | 125 |
| 200 | 25 | 200 per circuit |
| 315 | 31.5 | 200 per circuit |
| 500 | 50 | 200 per circuit |
| 750 | 63 | 200 per circuit |
| 1000 | 80 | 200 per circuit |

The fuse links offered shall be capable of withstanding magnetizing inrush currents up to 12 times the transformer rated full load current for 0.1 seconds and 25 times the transformer rated full load current for 0.01 seconds and discriminate with the secondary fuse links specified.

The fuse links shall be capable of withstanding 125% of the transformer rated full load current continuously and periodic over-loads up to 150% of the transformer rated full load current.

The fuse links shall be able to clear a phase to neutral fault on the secondary terminals of the transformer in less than 1.5 seconds, in order to limit damage to the transformer in the event of such fault. (The impedance voltage of the transformer at the rated current may be assumed as 4%)

**The current-time characteristics of the fuse-links offered shall be submitted with the tender in (MS Office) Excel format.**

These shall include the minimum melting time-current curves, maximum clearing time-current curves and current limiting data showing the extent of current limiting. A table of (current -time) data defining the above curves should also be included with the tender in (MS Office) Excel format.

Fuse links shall be suitable for mounting in any orientation.

### 4.4 Striker

The fuse-links shall be fitted with a striker for indication purposes and to initiate three phase tripping of the circuit being protected. The mechanical characteristics of the striker shall be in accordance with the heavy duty type of AS1003.2. The energy rating of the striker shall be 2J±1J.

# 5. PERFORMANCE AND TESTING

### a. Testing

Test certificates of the type tests for the striker fuse as per AS1033.2, and the power dissipation test (AS1033.2) shall be provided with the tender. The routine and batch test certificates shall be submitted with each delivery.

The test certificate for the time current characteristics provided with the tender shall include the minimum melting time characteristics and the total clearing time characteristics. A table of (current -time) data defining the above curves shall also be included with the tender in (MS Office) Excel format.

Current limiting data showing the extent of current limiting should be included.

**The testing shall have been carried out by an internationally accredited testing authority.**

### b. Acceptance Tests

The EFL may carry out acceptance test on equipment to prove compliance to the requirements of this Specification. Any equipment showing evidence of failure to comply with the requirements of this specification will be liable to rejection.

### c. Witnessing of Tests

The EFL reserves the right to witness all testing. The Supplier shall give EFL reasonable notice of when testing will be carried out and two (2) EFL engineers to be invited to witness the testing. The return-air travel, accommodation, meals and other expense related to test witnessing shall be borne by the Bidder as a value adding service.

### d. Compliance

The Supplier shall state in writing that their offer complies with the relevant Standards and this specification. If the Supplier is offering equipment manufactured to an equivalent standard, full details of that standard must be given including a copy written in English.

# 6. RELIABILITY

### 6.1. Service Life

Bidders are required to comment on the reliability of the equipment and the performance of the materials offered for a service life of 40 years under the specified system and environmental conditions.

### 6.2. Evidence in Support of Reliability

Where the specified guaranteed service life is less than 40 years Suppliers are required to provide comment and submit evidence in support of the reliability and performance claimed including detailed information on Failure Mode and Effect Analysis.

# 7. ENVIRONMENTAL CONSIDERATIONS

Suppliers are required to comment on the environmental soundness of the design and the materials used in the manufacture of the items offered. In particular, comments should address such issues as recyclability and disposal at end of service life and also disposal of packaging materials.

# 8. PACKING AND MARKING

## 8.1. General

The packaging of items by the bidder must ensure that they are capable of being delivered undamaged giving due consideration to the quantity, distance of transportation and the preferred method of handling at each location.

## 8.2. Marking

Markings shall be provided on the striker fuse in accordance with Clause 6.9.3 of AS 1033.2.

The following information shall be legibly and indelibly marked on **BOTH** sides of the carton containing the striker fuse:

a) Manufacturer's name
b) EFLs Purchase Order number
c) EFL Stock Code
d) Rated voltage and current of fuse links
e) Gross mass of carton and contents

# 9. QUALITY REQUIREMENTS

Tenderers are required to submit evidence that the design and manufacture of Striker Fuses are in accordance with AS/NZS ISO 9001 and shall include the Capability Statement associated with the Quality System Certification.

If the Tenderer is a non-manufacturing supplier, the documentary evidence shall include the quality system certifications of both the supplier and the manufacturer.

# 10. STOCK AVAILABILITY

The bidder is required to indicate the size of consignment stock it will hold and the ability to meet the required demand of the estimated quantity at any given time during the contract period. The movement of Striker Fuses will depend on the EFL's project works and for operation and maintenance purposes. An estimate movement of the items are outlined in the table below but the fuses will not be purchase as a lump sum quantity at once. Hence, the successful bidder will be required to carry a consignment / safety stock at times to meet EFL's demand within the three year contract period.

| Stock No. | Item Description | Approximate 3 Year Stock Movement |
|---|---|---|
| I02137 | 20A 11KV STRIKER PIN FUSE | New Item |
| I04608 | 25A 11KV STRIKER PIN FUSE | 105 |
| I02138 | 31.5A 11KV STRIKER PIN FUSE | New Item |
| I04609 | 40A 11KV STRIKER PIN FUSE | 46 |

| | | |
|---|---|---|
| I04610 | 50A 11KV STRIKER PIN FUSE | 93 |
| I02139 | 63A 11KV STRIKER PIN FUSE | New Item |
| I04611 | 80A 11KV STRIKER PIN FUSE | 189 |
| I02140 | 125A 11KV STRIKER PIN FUSE | New Item |

# 11. PRODUCT WARRANTY PERIOD

The bidders are required to provide the warranty period as part of their proposal. A minimum warranty period of twenty-four (24) months from time of dispatch from factory shall be provided.

# 12. INFORMATION TO BE SUPPLIED BY THE BIDDER

## 12.1 Documentation to be supplied with the tender

To enable EFL to fully evaluate the HRC Fuses offered, (in addition to the completed Specification Requirement and Guaranteed Performance schedule) the bidder shall submit the following information with their tender:

a) Sectional view, showing the General constructional feature
b) List of switchgears the Striker Fuse is compatible with
c) Complete dimensional drawing
d) Duly completed schedule of guaranteed technical particulars
e) Time – current characteristics as listed in this specification
f) Manufacturing experience and list of purchasers for past 5 years
g) Type test certificates
h) Sample routine test certificates
i) End of service life disposal methods
j) Detailed procedure for receiving, handling, lifting and storage
k) Evidence of Quality Management Systems
l) Evidence of Health, Safety and Environmental plans
m) Evidence of financial ability to provide the level of service and support
n) Origin of materials used in manufacture of the striker Fuses
o) Names and resumes of key team members who will be assigned to work with EFL upon successful award of the three-year supply contract (if bidder is successful)

Bidders may be asked to provide additional information during tender assessment period or following award of contract.

# 13. DESIGN AND CONSTRUCTION - HRC Fuses

Equipment offered by the bidders will need to conform to this Specification.

## 13.1. HRC Fuses

The fuses shall comply with the requirements of the Australian Standards of the AS/NZS 60269 series and shall have the following characteristics in particular:

- Utilization category: Type 'gG' (fuse-links with a full-range breaking capacity for general application).
- Rated current: As per item descriptions in Table 1.1.
- The required minimum breaking capacity for different fuse groupings will be specified below. If, due to historical and or manufacturing reasons, or due to conflict in meeting other fuse-link characteristic requirements in this technical specification, such minimum rated breaking capacity cannot be achieved for a particular fuse-link type then Tenderers are encouraged to submit their highest rated breaking capacity alternative offer for that item(s) fuse type including full details of the item(s)
- The current- time characteristics of the fuses offered shall be included in the tender.
- Fuse elements shall be of pure silver. Should any other material be used, evidence to indicate that deterioration will not occur in the long term shall be provided.
- All metallic components of the fuse shall be resistant to corrosive influences that may occur in normal use.
- All components of the fuse shall be sufficiently resistant to mechanical stresses that may occur in normal use as well as abnormal heat and fire.
- Markings shall be provided on the fuses as required under the Clause 6.2 of AS/NZS60269.1.

## 13.2. Electrical Characteristics – HRC Fuse

- Rated voltage: Minimum of 415V.
- Maximum rated power dissipation levels shall not be greater than the values given in Section II, Figure 1(II*) of AS/NZS60269.2.1
- Rated breaking capacity of not less than 80kA at the rated voltage.
- Time-current characteristics shall comply with Section II, sub-clause 5.6 of AS/NZS 60269.2.1.
- $I^2t$ characteristics of the fuses offered shall be provided with the tender documentation in Microsoft Office Excel format.
- Dimensions in accordance with Section II, Figure 1(II*) of AS/NZS 60269.2.1 and as detailed in **Appendix 13.**

## 13.3. Color

The background color of the HRC Fuses supplied under this specification shall be in accordance with AS 2700 and table below.

| Item | Color | Color as per AS 2700 |
|---|---|---|
| HRC Fuses | N14 White or similar | In accordance with the requirements of AS 2700 |

## 13.4. Marking

The permanent marking of all items shall meet the requirements specified in the appropriate Australian Standard. The following shall be marked on the HRC fuses:

- Manufactures name/ logo
- Rated voltage
- Rated current
- Fuse type

- Any other information deemed fit for identification by the manufacture

All marking on the HRS fuses shall be permanent for the service life of the product offered. Evidence shall be provided by the tenderers for/during evaluation.

# 14. PERFORMANCE AND TESTING

## 14.1. General

The products covered in this specification shall withstand the electrical/mechanical stress associated with continuous operation at the highest system voltage under the service conditions described in Clause 3.

## 14.2. Testing

Fuses offered shall be tested in accordance with Section 8 of AS/NZS 60269.1. Copies of the Type Test Certificates confirming the following fuse characteristics for each item offered shall be supplied with the tender.

- Time-current characteristics plotted on a scaled drawing or a transparency having the same scales as used in Figure 1 of AS/NZS 60269.1 Manufacturing tolerances applicable to the above curves shall also be stated.
- $I^2t$ characteristics (for arcing and operating), Cut-off characteristics and Power dissipation characteristics of the fuses offered shall be submitted with the tender in Microsoft Office Excel format.

**The successful Tenderer shall provide the routine and batch test certificates if requested by EFL during the contract period.**

Preference will be given to fuses having the certifications of ASTA or any other recognized international testing authority.

## 14.3. Acceptance Tests

The EFL may carry out acceptance test on the Fuses to prove its compliance to the requirements of this Specification. Any equipment showing evidence of failure to comply with the requirements of this specification will be liable to rejection.

## 14.4. Witnessing of Tests

The EFL reserves the right to witness all testing. The Supplier shall give EFL reasonable notice of when testing will be carried out and two (2) EFL engineers to be invited to witness the testing. The return-air travel, accommodation, meals and other expense related to test witnessing shall be borne by the Bidder as a value adding service.

## 14.5. Compliance

The Supplier shall state in writing that their offer complies with the relevant Standards and this specification. If the Supplier is offering equipment manufactured to an equivalent standard, full details of that standard must be given including a copy written in English.

# 15. RELIABILITY

## 15.1. Service Life

Bidders are required to comment on the reliability of the equipment and the performance of the materials offered for a service life of 40 years under the specified system and environmental conditions by specifying the guaranteed service life in the **Appendix of Technical Details.**

## 15.2. Evidence in Support of Reliability

Where the specified guaranteed service life is less than 40 years, Suppliers are required to provide comments and submit evidence in support of the reliability and performance claimed including detailed information on Failure Mode and Effect Analysis.

# 16. ENVIRONMENTAL CONSIDERATIONS

Suppliers are required to comment on the environmental soundness of the design and the materials used in the manufacture of the items offered. In particular, comments should address such issues as recyclability and disposal at end of service life and also disposal of packaging material.

# 17. PACKAGING AND MARKING

The packaging of items by the bidder must ensure that they are capable of being delivered undamaged giving due consideration to the quantity, distance of transportation and the preferred method of handling at each location. .

Each packaged lot shall be marked with the following information:

- Manufacture's Name
- Purchase Order Number
- Contact No.
- EFL Stock Code
- Item Description
- Pack Size
- Pack Weight

# 18. QUALITY REQUIREMENTS

Tenderers are required to submit evidence that the design and manufacture of HRC Fuses are in accordance with AS/NZS ISO 9001 and shall include the Capability Statement associated with the Quality System Certification.

If the Tenderer is a non-manufacturing supplier, the documentary evidence shall include the quality system certifications of both the supplier and the manufacturer.

# 19. STOCK AVAILABILITY

The bidder is required to indicate the size of consignment stock it will hold and the ability to meet the required demand of the estimated quantity at any given time during the contract period. The movement of HRC Fuses will depend on the EFL's project works and for operation and maintenance purposes. An estimate movement of the items are outlined in the table below but the Fuses will not be purchase as a lump sum quantity at once. Hence, the successful bidder will be required to carry a consignment / safety stock at times to meet EFL's demand within the three year contract period.

| Stock Code | Item Description | Approximate 3 Year Stock Movement |
|---|---|---|
| I01964 | 20A HRC FUSE | 263 |
| I01947 | 25A HRC FUSE | New Item |
| I01965 | 32A HRC FUSE | 109 |
| I02002A | 40A HRC FUSE | 56 |
| I01948 | 50A HRC FUSE | New Item |
| I01968 | 63A HRC FUSE | 945 |
| I02005 | 80A HRC FUSE | 1919 |
| I02006 | 100A HRC FUSE | 1136 |
| I02022 | 125A HRC FUSE | 4503 |
| I02023 | 160A HRC FUSE | 1100 |
| I02024 | 200A HRC FUSE | 487 |
| I02047 | 250A HRC FUSE | 347 |
| I02048 | 300A HRC FUSE | 387 |
| I01951 | 355A HRC FUSE | New Item |
| I02021 | 400A HRC FUSE | 190 |

# 20. PRODUCT WARRANTY PERIOD

The bidders are required to provide the warranty period as part of the proposal. A minimum warranty period of twenty-four (24) months from time of dispatch from factory shall be provided.

# 21. INFORMATION TO BE SUPPLIED BY THE BIDDER

## 21.1. Documentation to be supplied with the tender

To enable the EFL to fully evaluate the HRC Fuses offered, (in addition to the completed Specification Requirement and Guaranteed Performance schedule) the bidder shall submit the following information with their tender:

- List showing similar equipment supplied to or on order for other utilities in Australia or New Zealand or the Oceania region for the past 5 years
- Typical arrangement drawings and full details of the dimensions
- Type test certificates as per Clause 5.2
- Sample inspection and test plans for the HRC Fuses where applicable
- End of service life disposal methods
- Detailed procedure for receiving, handling, lifting and storage
- Evidence of Quality Management Systems
- Evidence of Health, Safety and Environmental plans
- Evidence of financial ability to provide the level of service and support
- Origin of materials used in manufacture of the HRC Fuses.
- Names and resumes of key team members who will be assigned to work with EFL upon successful award of the three-year supply contract (if bidder is successful)

Bidders may be asked to provide additional information during tender assessment period or following award of contract

# 22. Samples

When requested, production samples of each item shall be submitted with the offer. Each sample shall be delivered freight free, suitably packaged and labelled with the following information:

- Name of supplier and this contact number

- Tender number
- Any supporting data on features or characteristics

## 23. Training

Training material in the form of drawings, instructions and/or audio visuals (in CD format) are required to be provided for the items accepted under the tender. The Tenderers shall allow the cost of production and delivery of training material in the tendered prices. The training materials should include but not be limited to the following topics:

- Handling
- Storage
- Application
- Installation
- Maintenance
- Environmental performance
- Electrical performance
- Mechanical performance
- Disposal

**Offers of vendors who fail to furnish above particulars shall be rejected.**

# 24. TECHNICAL SCHEDULE

## 24.1 Price Schedule

Bidders are required to complete the following price schedule and submit with the offer.

| Stock No. | Item Description | Unit Price (CIF) |
|---|---|---|
| I02137 | 20A 11KV STRIKER PIN FUSE | |
| I04608 | 25A 11KV STRIKER PIN FUSE | |
| I02138 | 31.5A 11KV STRIKER PIN FUSE | |
| I04609 | 40A 11KV STRIKER PIN FUSE | |
| I04610 | 50A 11KV STRIKER PIN FUSE | |
| I02139 | 63A 11KV STRIKER PIN FUSE | |
| I04611 | 80A 11KV STRIKER PIN FUSE | |
| I02140 | 125A 11KV STRIKER PIN FUSE | |

| Stock Code | Item Description | Unit Price (CIF) |
|---|---|---|
| I01964 | 20A HRC FUSE | |
| I01947 | 25A HRC FUSE | |
| I01965 | 32A HRC FUSE | |
| I02002A | 40A HRC FUSE | |
| I01948 | 50A HRC FUSE | |
| I01968 | 63A HRC FUSE | |
| I02005 | 80A HRC FUSE | |
| I02006 | 100A HRC FUSE | |
| I02022 | 125A HRC FUSE | |
| I02023 | 160A HRC FUSE | |
| I02024 | 200A HRC FUSE | |
| I02047 | 250A HRC FUSE | |
| I02048 | 300A HRC FUSE | |
| I01951 | 355A HRC FUSE | |
| I02021 | 400A HRC FUSE | |

## 24.2 Technical Details – Striker Fuse

All tenderers are required to complete and submit a copy of this form with their bid submissions. A separate copy is to be submitted for each item offered.

| Particulars | Units | Bidders Response |
|---|---|---|
| Name of Manufacturer | | |
| Address of Manufacturer | | |
| Country of Manufacturer | | |
| Origin of materials for manufacture of fuses | | |
| Material of Fuse | | |
| Weight of Fuse | kg | |
| Weight per Crate | | |
| Time-Current Characteristics of Fuse Attached? | Yes/No | |
| Cut-off current Characteristics of Fuse Attached? | Yes/No | |
| $I^2$ t Characteristics Attached? | Yes/No | |
| Dimensional details of the fuse Attached? | Yes/No | |
| Prospective Breaking Current | kA | |
| Breaking Capacity | kA | |
| Minimum Breaking Current | A | |
| Power dissipation at rated current | W | |
| Energy rating of the striker pin | J | |
| Class of Fuse (Full Range or General Purpose) | | |
| Fuse end cap details: | | |
| Fuse End Cap Material | | |
| Plating Material | | |
| Thickness of plating | | |
| Fuse end fittings details: | | |
| Material of Castings | | |
| Plating Material | | |
| Thickness of Plating | | |

**Name of Tenderer:** _____

**Signature of Tenderer**: _____

**Date:** _____

## 25. Technical Details – HRC Fuses

This schedule shall be completed and submitted with the offer. A separate schedule shall be provided for each item offered:

| Particulars | Units | Requirements | Tenderers Response |
|---|---|---|---|
| EFL Stock Code | | | |
| Manufactures Name | | | |
| Origin of materials used for manufacturing of HRC Fuses | | | |
| Country of manufacture | | | |
| Manufactures type test certificate number | | | |
| Rated voltage | V | Min. of 415 | |
| Rated current | A | Bidder to state | |
| Breaking capacity | kA | 80 | |
| Conventional non-fusing current | X rated current | Bidder to state | |
| Conventional fusing current | X rated current | Bidder to state | |
| Conventional time | Hours | Table 2 in AS/NZS 60269.2.1 | |
| Category of duty | | Bidder to state | |
| Power dissipation at rated current | W | Section II, Figure 1(II*) of AS/NZS60269.2.1 | |
| DC resistance measured at no load at 40$^{o}$C | Ω | Bidder to state | |

| | | | |
|---|---|---|---|
| Has the fuse been fully tested to AS/NZS 60269.1 by an accredited testing authority | Yes/No | | |
| Name of testing authority | | | |
| Overall length | mm | Section II, Figure 1(II*) of AS/NZS 60269.2.1 | |
| Fixing centres | mm | | |
| Length of tags | mm | | |
| Width of tags | mm | | |
| Height of tags | mm | | |
| Diameter of end caps | mm | | |
| Diameter A of elongated fixing holes | mm | | |
| Diameter B of elongated fixing holes | mm | | |
| Barrel length | mm | | |
| Barrel diameter | mm | | |
| Barrel material | | Bidder to state | |
| End cap/ Tag corrosion protection | | Bidder to state | |
| Fuse element material | | Refer to Clause 4.1 | |
| Weight of fuse | kg | Bidder to state | |
| Weight per crate | kg | Bidder to state | |
| Number of fuses per crate | | | |

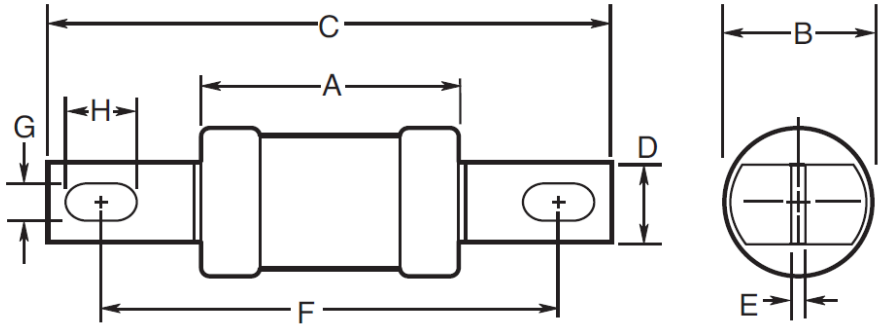
**Name of Tenderer:** _____

**Signature of Tenderer**: _____

**Date:** _____

## 25.1. Typical Dimensions for HRC Fuses

The bidders shall consider the following dimensions for all the fuse ratings:




| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| May vary depending on rating | | 128.5 | 14.2 | 1.5 | **111** | 8.7 | 11.8 |

**Note:**

1. All dimensions in the above table are in mm
2. The dimensions are just estimate considering the Fuse Links in which the HRC fuses will be used for, where dimension **F** shall be maintained to meeting the construction requirements of the Fuse Link

## 26. Submission Requirements

All tenderers are required to complete and submit a copy of the submission requirements with their bid submissions.

| Requirements | Response from Bidders |
|---|---|
| Completed technical details (Yes/No) | |
| Training included as part of Bid. (Yes/No) | |
| Validity of bid (120 days required) (Yes/No) | |
| Witnessing included as part of bid. (Yes/No) | |
| Payment conditions | |
| Delivery Term. (CIF preferred) | |
| Price review period after award of tender (months) | |
| Bidders company profile outlining financial, technical and production capabilities | |
| Detailed reference list of customers already using equipment offered during the last 5 years with particular emphasis on units of similar design and rating | |
| Quality management system used in the production of fuses, attach certificates | |
| Health, Safety and Environmental plans | |
| Detailed receiving, handling and storage details | |
| Minimum warranty period from time of acceptance of fuses | |
| Sample inspection and test plan | |
| Typical installation manual for fuses | |
| Disposal method after service life | |
| Complete dimensional drawing | |
| List of switchgears the Striker Fuse is compatible with | |
| List of Type test certificates provided. (As per Clause 5.1) | |
| Sample routine test certificates | |

**Name of Tenderer:** _____

**Signature of Tenderer**: _____

**Date:** _____

## TENDER CHECKLIST

***The Bidders must ensure that the details and documentation mention below must be submitted as part of their tender Bid***

Tender Number _____

Tender Name _____

1. Full Company / Business Name: _____

   **(Attach copy of Registration Certificate)**

2. Director/Owner(s): _____

3. Postal Address:_____

4. Phone Contact:_____

5. Fax Number:_____

6. Email address: _____

7. Office Location:_____

8. TIN Number: _____

   **(Attach copy of the VAT/TIN Registration Certificate - Local Bidders Only (Mandatory)**

9. FNPF Employer Registration Number: _____ **(For Local Bidders only) (Mandatory)**
10. **Provide a copy of Valid FNPF Compliance Certificate (Mandatory- Local Bidders only)**
11. **Provide a copy of Valid FRCS (Tax) Compliance Certificate (Mandatory Local Bidders only)**
12. **Provide a copy of Valid FNU Compliance Certificate (Mandatory Local Bidders only)**
13. Contact Person: _____

I declare that all the above information is correct.

Name: _____

Position: _____

Sign: _____

Date: _____

## Tender submission

Bidders are requested to upload electronic copies via Tender Link by registering their interest at: https://www.tenderlink.com/efl

**EFL will not accept any hard copy submission to be dropped in the tender box at EFL Head Office in Suva.**

**This tender closes at 4.00pm (1600hrs) on Wednesday 1st May, 2024.**

For further information or clarification please contact our Supply Chain Office on phone **(+679) 3224360 or (+679) 9992400** or email us on tenders@efl.com.fj

**The bidders must ensure that their bid is inclusive of all Taxes payable under Fiji Income Tax Act. Bidders are to clearly state the percentage of VAT that is applicable to the bid prices.**

The lowest bid will not necessarily be accepted as the successful bid.

**The Tender Bids particularly the "Price" must be typed and not hand written.**

**Any request for the extension of the closing date must be addressed to EFL in writing three (3) working days prior to the tender closing date.**

**Tender Submission via email or fax will not be accepted.**